

WHAT IS CLAIMED IS:

1. An apparatus for perforating a sheet of media having a front side and a back side, comprising:

5 a perforation forming mechanism including at least one perforation device, said perforation forming mechanism being configured to drive said at least one perforation device through said sheet of media to extend through said sheet of media by a distance; and

a controller coupled to said perforation forming mechanism, said controller being configured to select said distance.

2. The apparatus of claim 1, further comprising a mid-frame for supporting said back side of said sheet of media, said mid-frame including a trough for receiving said perforation device after said perforation device passes through said sheet of media.

3. The apparatus of claim 2, further comprising a foam positioned in said trough.

4. The apparatus of claim 3, wherein said foam fills said trough, said foam supporting said back side of said sheet of media at said trough.

5. The apparatus of claim 1, wherein said perforation forming mechanism includes multiple perforation devices.

6. The apparatus of claim 1, wherein said controller selects said distance to create Braille indicia on said sheet of media.

7. The apparatus of claim 1, wherein said at least one perforation device includes a needle having a taper, wherein said distance that said needle extends through said sheet of media effects a size of a perforation opening in said sheet of media.

8. The apparatus of claim 1, wherein said at least one perforation device includes at least one blade.

9. The apparatus of claim 1, further comprising a perforation maintenance station including an abrasive member for sharpening said perforation device.

10. The apparatus of claim 1, further comprising:
a mid-frame for supporting said back side of said sheet of media; and
a carrier system configured to transport a printhead carriage and a perforator carriage in a reciprocating manner with respect to said mid-frame, said perforator carriage being coupled to said printhead carriage, said perforator carriage carrying said
5 perforation forming mechanism.

11. The apparatus of claim 10, further comprising an isolation damper coupling said printhead carriage to said perforator carriage.

12. The apparatus of claim 1, further comprising:
a first roller positioned upstream of said perforation device; and
a second roller positioned downstream of said perforation device,
said sheet of media being suspended between said first roller and said second
5 roller during perforation.

13. The apparatus of claim 12, wherein said first roller is a feed roller and said second roller is an exit roller.

14. An apparatus, comprising:
a mid-frame for supporting a back side of a sheet of media;
a carrier system configured to transport a carriage in a reciprocating manner with respect to said mid-frame, said carriage including a bay; and
5 a perforation cartridge configured to be received in said bay, said perforation cartridge containing a perforation forming mechanism.

15. The apparatus of claim 14, wherein an ink jet printhead cartridge and said perforation cartridge are configured to be interchangeable in said bay.

16. The apparatus of claim 14, wherein said carriage includes multiple bays to accommodate multiple cartridges, wherein at least one of said multiple cartridges is said perforation cartridge.

17. The apparatus of claim 14, further comprising a controller coupled to said perforation forming mechanism, said controller being configured to select at least one of a vertical perforation resolution and a horizontal perforation resolution of said apparatus.

18. The apparatus of claim 17, wherein said controller selects said at least one of said vertical perforation resolution and said horizontal perforation resolution based on a media type.

19. The apparatus of claim 17, wherein said controller selects said at least one of said vertical perforation resolution and said horizontal perforation resolution based on a media thickness.

20. The apparatus of claim 17, wherein said controller selects said at least one of said vertical perforation resolution and said horizontal perforation resolution based on a user selection.

21. A perforation cartridge configured to be received in a bay of a printer carriage, said perforation cartridge containing a perforation forming mechanism including a perforation device.

22. The perforation cartridge of claim 21, wherein said perforation forming mechanism includes multiple perforation devices.

23. The perforation cartridge of claim 21, wherein said perforation device is one of a needle and a blade.

24. The perforation cartridge of claim 21, wherein said perforation forming mechanism comprises:

- a motor having a rotatable shaft;
- a flywheel coupled to said rotatable shaft; and
- 5 a linkage pivotably connected between said flywheel and said perforation device.

25. The perforation cartridge of claim 24, further comprising a control circuit connected to said motor for controlling an operation of said motor.

26. The perforation cartridge of claim 25, further comprising a sensor connected to said control circuit, said sensor being used to detect a position of said perforation device.

27. The perforation cartridge of claim 21, wherein said perforation forming mechanism comprises:

- a motor having a rotatable shaft;
- a cam coupled to said rotatable shaft; and
- 5 a cam follower connected to said perforation device, and positioned adjacent said cam.

28. The perforation cartridge of claim 27, wherein said perforation device is one of a needle and a blade.

29. The perforation cartridge of claim 27, further comprising a control circuit connected to said motor for controlling an operation of said motor.

30. The perforation cartridge of claim 29, further comprising a sensor connected to said control circuit, said sensor being used to detect a position of said perforation device.

31. The perforation cartridge of claim 21, wherein said perforation forming mechanism comprises:

- a solenoid; and
- an armature received in said solenoid and connected to said perforation device.

32. The perforation cartridge of claim 31, wherein said perforation device is one of a needle and a blade.

33. The perforation cartridge of claim 31, further comprising a control circuit connected to said solenoid for controlling a position of said armature.

34. The perforation cartridge of claim 33, further comprising a sensor connected to said control circuit, said sensor being used to detect a position of said perforation device.

35. An apparatus for perforating a sheet of print media having a front side and a back side, comprising:

5 a perforation forming mechanism including at least one perforation device; and
a mid-frame for supporting said back side of said sheet of print media, said mid-frame including a trough extending along a width of said mid-frame for receiving said at least one perforation device.

36. The apparatus of claim 35, further comprising a foam positioned in said trough.

37. The apparatus of claim 36, wherein said foam fills said trough, said foam supporting said back side of said sheet of print media at said trough.

38. The apparatus of claim 35, said trough being configured with a depth such that said at least one perforation device does not contact a bottom of said trough when said at least one perforation device is at a fully extended position.

39. The apparatus of claim 38, wherein said foam is positioned to receive at least a tip portion of said at least one perforation device.

40. The apparatus of claim 35, wherein said perforation device includes at least one needle.

41. The apparatus of claim 35, wherein said perforation device includes at least one blade.

42. The apparatus of claim 35, further comprising a perforator maintenance station including an abrasive member for sharpening said perforation device.

43. The apparatus of claim 35, further comprising:
a conveyor belt arranged in said trough for carrying paper waste generated during perforation of said sheet of print media; and
a conveyor drive unit coupled to said conveyor belt for advancing said conveyor
5 belt.

44. The apparatus of claim 35, further comprising:
a first roller positioned upstream of said perforation forming mechanism; and
a second roller positioned downstream of said perforation forming mechanism,
said sheet of print media being suspended between said first roller and said
5 second roller during perforation.

45. The apparatus of claim 44, wherein said first roller is a feed roller and said second roller is an exit roller.

46. An apparatus for perforating a sheet of print media having a front side and a back side, comprising:
a printhead carriage for carrying a printhead;
a perforator carriage for carrying a perforation forming mechanism; and
5 an isolation damper coupling said printhead carriage to said perforator carriage.

47. The apparatus of claim 46, further comprising a carriage drive to drive each of said printhead carriage and said perforator carriage in a reciprocating manner in unison.

48. The apparatus of claim 46, wherein said perforation forming mechanism includes a perforation device, and further comprising a mid-frame positioned to support

said back side of said sheet of print media, said mid-frame including a trough for receiving said perforation device after said perforation device passes through said sheet
5 of print media.

49. The apparatus of claim 46, wherein said perforation forming mechanism includes a perforation device.

50. The apparatus of claim 49, further comprising a perforation maintenance station including an abrasive member for sharpening said perforation device.

51. The apparatus of claim 49, wherein said perforation device is one of a needle and a blade.

52. The apparatus of claim 46, further comprising a controller coupled to said perforation forming mechanism, said controller being configured to select at least one of a vertical perforation resolution and a horizontal perforation resolution of said apparatus.

53. The apparatus of claim 46, wherein said perforation forming mechanism includes multiple perforation devices.

54. The apparatus of claim 46, further comprising:
a first roller positioned upstream of said perforation forming mechanism; and
a second roller positioned downstream of said perforation forming mechanism,
said sheet of print media being suspended between said first roller and said
5 second roller during perforation.

55. The apparatus of claim 46, further comprising:
a D-shaped guide rod for guiding said printhead carriage and said perforator carriage, said D-shaped guide rod being drivingly coupled to said perforation forming mechanism;
5 a motor coupled to said D-shaped guide rod; and

a controller connected to said motor, said controller being configured to operate said motor so as to impart a rotation to said D-shaped guide rod to drive said perforation forming mechanism.

56. An apparatus, comprising:

a perforation forming mechanism including a perforation device for forming perforations in a media sheet; and

5 a controller coupled to said perforation forming mechanism, said controller being configured to select at least one of a vertical perforation resolution and a horizontal perforation resolution of said apparatus.

57. The apparatus of claim 56, wherein said controller selects said at least one of said vertical perforation resolution and said horizontal perforation resolution based on a media type.

58. The apparatus of claim 56, wherein said controller selects said at least one of said vertical perforation resolution and said horizontal perforation resolution based on a media thickness.

59. The apparatus of claim 56, wherein said controller selects said at least one of said vertical perforation resolution and said horizontal perforation resolution based on a user selection.

60. The apparatus of claim 56, said perforation forming mechanism being configured to drive said perforation device through said sheet of print media to extend through said sheet of print media by a distance, said distance being selectable by said controller.

61. The apparatus of claim 60, wherein said controller selects said distance to create Braille indicia on said sheet of print media.

62. An imaging apparatus, comprising:

a perforation forming mechanism including a perforation device for forming perforations in a media sheet; and

5 a controller coupled to said perforation forming mechanism, said controller being configured to control said perforation forming mechanism to create Braille indicia on said media sheet.

63. The imaging apparatus of claim 62, wherein said media sheet is a transparency sheet.

64. An apparatus for perforating a sheet of print media having a front side and a back side, comprising:

a carrier system including a carriage and a drive unit for driving said carriage in a reciprocating manner over said sheet of print media; and

5 a perforation forming mechanism mounted to said carriage for reciprocation with said carriage, said perforation forming mechanism including at least one perforation device, said perforation forming mechanism being configured to drive said at least one perforation device through said sheet of print media to extend through said sheet of print media by a distance.

65. The apparatus of claim 64, wherein said apparatus is an ink jet printer.

66. The apparatus of claim 64, wherein said perforation device is a needle.

67. The apparatus of claim 64, further comprising:

a mid-frame for supporting said back side of said sheet of print media; and

5 said carrier system configured to transport a printhead carriage and a perforator carriage in a reciprocating manner with respect to said mid-frame, said perforator carriage being coupled to said printhead carriage, said perforator carriage carrying said perforation forming mechanism.

68. The apparatus of claim 64, further comprising a controller coupled to said perforation forming mechanism, said controller being configured to select at least one of a vertical perforation resolution and a horizontal perforation resolution of said apparatus.

69. The apparatus of claim 68, wherein said controller selects said at least one of said vertical perforation resolution and said horizontal perforation resolution based on a media type.

70. The apparatus of claim 68, wherein said controller selects said at least one of said vertical perforation resolution and said horizontal perforation resolution based on a media thickness.

71. The apparatus of claim 68, wherein said controller selects said at least one of said vertical perforation resolution and said horizontal perforation resolution based on a user selection.